AUDIONET

MAX

Ultra Linear Power Amplifier

User's Manual

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1 Preface

The Audionet Team congratulates you on your purchase of this unit.

But before you start listening to your new Audionet MAX, please read this manual carefully so you are able to use and enjoy all functions of this unit without drawback on music quality.

1.1 Included

Included you will find the following items:

- the mono power amplifier MAX
- the user's manual (that you are currently reading)
- one standard mains cord

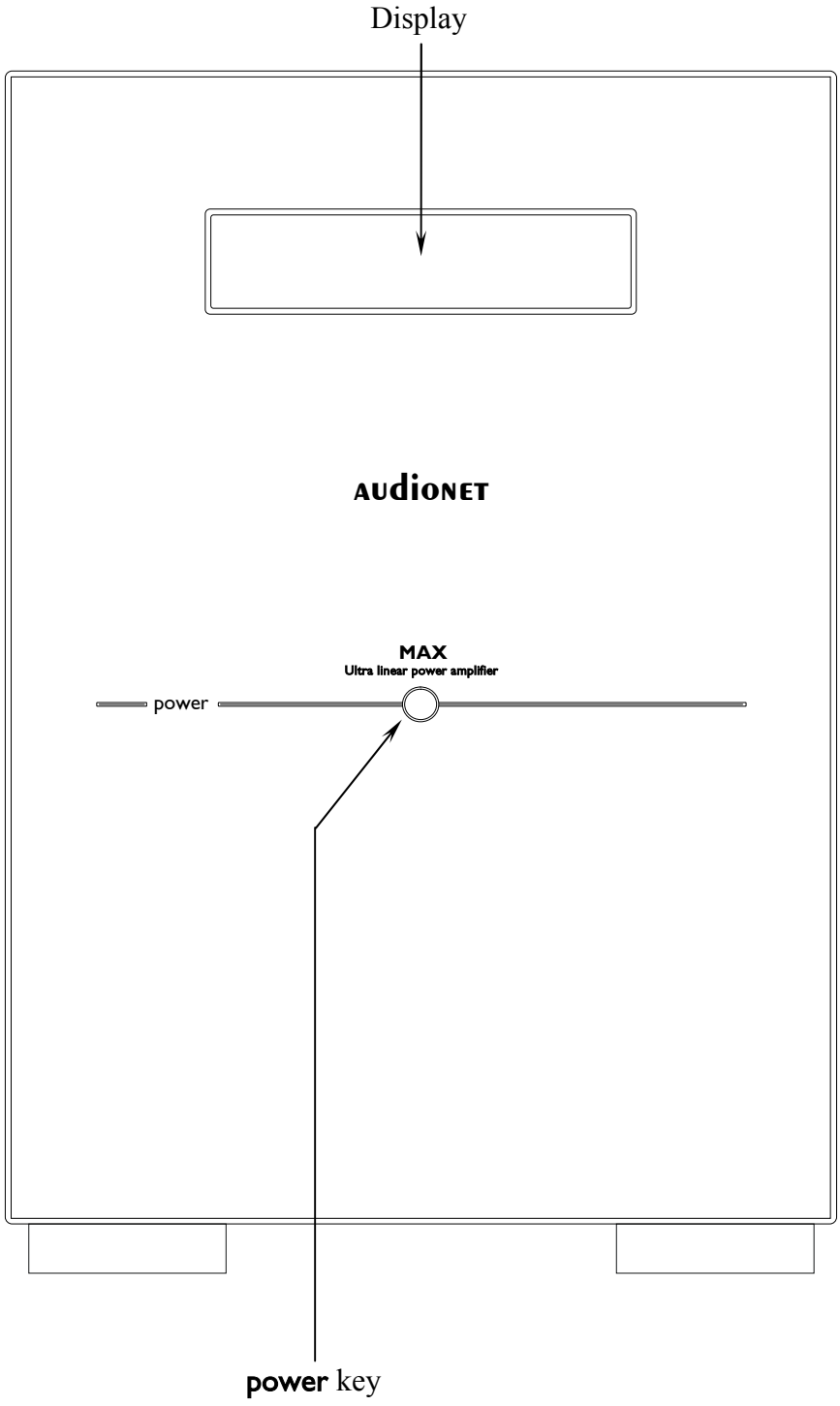
1.2 Transport

Important

- Please transport the MAX only in the included package.
- Always use the plastic bag to prevent scratches on the housing.
- Please allow the MAX to adapt to the climatic conditions in your listening room before you switch on the unit for the first time after transport.

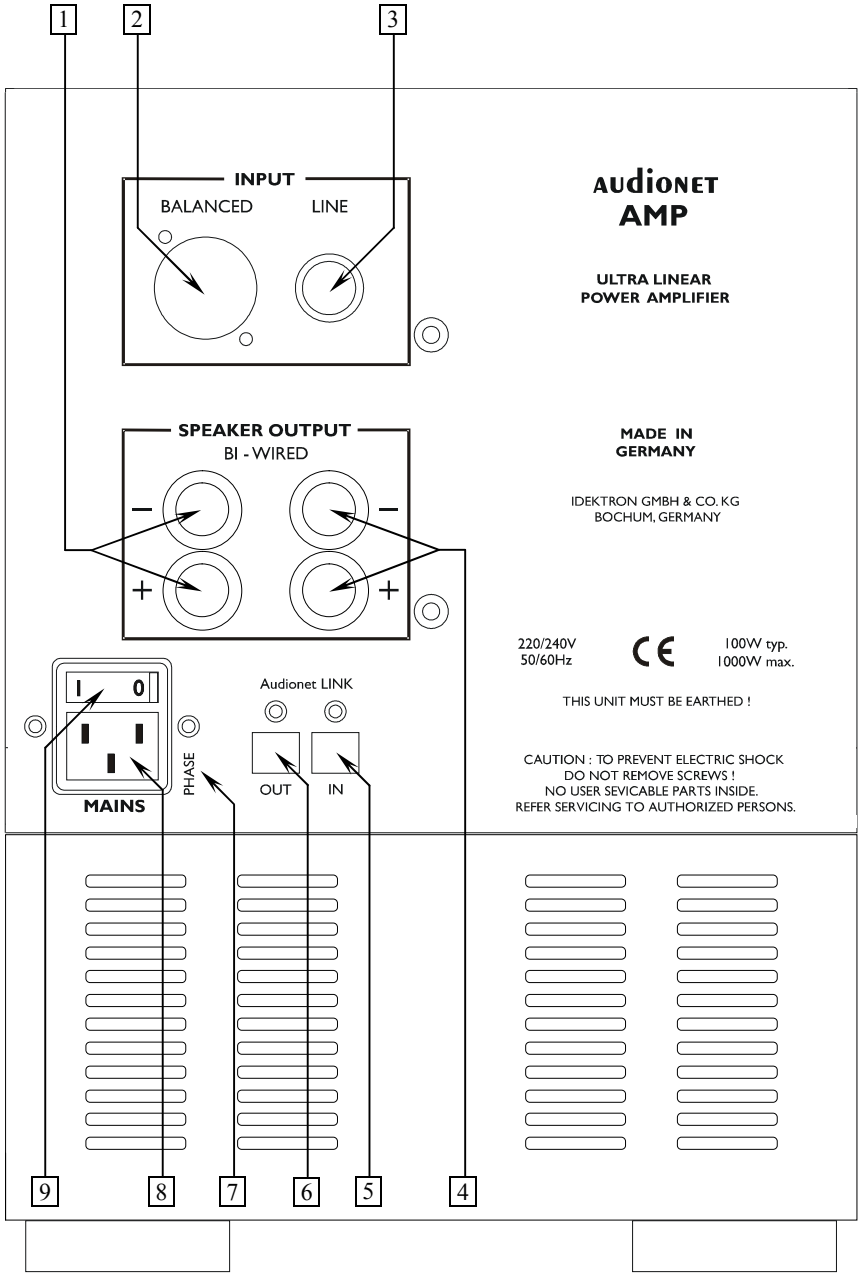
2 Overview control elements

2.1 Front panel



3 Overview connections

3.1 Back panel



1 speakers output 1
2 balanced (XLR) input
3 Cinch input
4 Speakers output 2
5 'Audionet Link' input
6 'Audionet Link' output
7 marking 'mains phase'
8 mains input
9 mains switch

4 Installation and power supply

Important

- **For connecting or removing loudspeakers and/or the pre amplifier your MAX must be switched off to prevent damage to the amplifier or the connected units.**
- **Please make sure that all cables are in absolute best conditions! Broken shields or short-cut loudspeaker cables could damage speakers and/or amplifiers.**

4.1 Placement

Your Audionet MAX has the perfect format for placing it right beside your speakers. Alternatively, two Audionet MAX sitting side by side have exactly the standard width of 43 cm. It is recommended to place the MAX into a high quality rack or onto a stable table.

Important

- Please find a place for your Audionet MAX that is sufficiently ventilated to allow the heat to dissipate.
- Do not expose the unit to direct sunlight.
- Do not place the MAX in close range to heat sources like radiators.
- Do not cover the ventilation slots of the unit.

4.2 Mains connection

The mains input 8* is on the back panel of the MAX. To connect the unit to mains use the included mains cord. If you prefer to use a different power cord make sure that it meets the specifications for your home country.

Important

- **The electrical specifications of your home country must meet the electrical specifications printed onto the back panel.**

---

* see numbers in section '*Back panel*' on page 8

- The MAX is a Class I unit and must be earthed. Please ensure a stable earth connection. Phase ('hot' pin) is marked on the back panel ('**PHASE**') [7].
- If you connect the mains cord please make sure that mains switch [9] at the back panel is switched off.
- Never pull the mains plug while the MAX is switched on! Before you pull the mains cord off its socket [8] at the back panel, power down the unit to stand-by mode and switch off the unit using mains switch [9].

Only in cases of extended absence (like vacations) or if massive trouble on the mains power is to be expected you should switch off the MAX from the mains using mains switch [9]. To disconnect the unit completely from mains pull the mains plug.

Tip

- Using high quality mains cords may improve the sound quality. Please consult your local Audionet dealer.

4.3 Orientation of mains plug

The correct polarization of mains is important for reasons of audio clarity and stability. Please connect the mains cord so that the hot pin of the wall outlet is connected to the pin of the mains input [8] marked '**PHASE**' [7].

Note

- Your Audionet MAX is able to detect a wrong polarization of the mains plug during start-up. If the message

  Attention: Mains
  Phase incorrect!

  appears in the display, when you switch on the unit from stand-by mode using the **power** key, switch off the MAX completely and flip the mains plug in the wall outlet (see section '*Mains phase detection*' on page 14).

5 Inputs and outputs

Important

- **For connecting or removing loudspeakers and/or the pre amplifier your MAX must be switched off to prevent damage to the amplifier or the connected units.**
- **Please make sure that all cables are in absolute best conditions! Broken shields or short-cut loudspeaker cables could damage speakers and/or amplifiers.**

5.1 Inputs

At first, connect your pre amplifier alternatively to inputs 2 or 3 of the MAX. You can use both a Cinch or a balanced (XLR) cable. For cable lengths exceeding 10 m we recommend the use of balanced cables.

Note

- Don't forget to activate the input you are using in the setup menu (see section '*Set Input*' on page 21).

5.2 Speaker terminals

Now connect your speakers to the gold plated terminals on the back panel of the MAX. You can use both banana plugs or spades as well as simple cable ends. The MAX features two electrically identical speaker terminals 1 and 4, which you may use alternatively. In case you would like to bi-wire your speakers please refer to section '*Bi-Wiring*' on page 12.

Note

- Look out for the correct connection of your speaker cables. Usually, the terminals of your speakers are marked '+' and '-'. The MAX uses the same marks.
- Wrong speaker polarization will result in severe loss of sound quality!

Important

- **Although the MAX has an effective protection system to prevent damage to the circuits, switch off the unit while working on the speaker and/or audio cables**.
- The nominal loudspeaker impedance should be 2 Ohms or higher.
- Never use force or tools tightening the terminal screws.

5.3 Bi-Wiring

If your speakers support bi-wiring, use two separate cables to connect each speaker to the output terminals [1] and [4] of the MAX. Impulse response and spatiality may improve significantly.

Note

- Again, please mind the correct polarization of the speakers!

5.4 Audionet Link

For your convenience, the MAX can be controlled remotely by one of Audionet's multi channel pre amplifiers (e.g. MAP or MAP 1) as well as one of Audionet's stereo pre amplifiers (e.g. PRE, PRE G2, PRE 1 or PRE 1 G3) using the 'Audionet Link' interface.

You only need a simple optical 'Toslink' cable to connect the 'Audionet Link' output of your Audionet pre amplifier to the 'Audionet Link' input **IN** [5] of the MAX.

In case you would like to automatically switch on/off further Audionet units in your system (e.g. a second MAX) using the 'Audionet Link' interface, please connect the 'Audionet Link' output **OUT** [6] of your MAX to the 'Audionet Link' input of the next Audionet unit (e.g. power amplifier, tuner, CD player etc.) using a simple 'Toslink' cable.

Note

- The 'switch on' signal is issued to any further Audionet units daisy chained to the 'Audionet Link' output of your MAX with a little delay to avoid all units switching on at the same moment, which could cause an overload of your mains fuse.
- Please read section '*Using Audionet Link*' on page 14. Also, consult the user's manuals of your Audionet components connected via 'Audionet Link' for further information.

6 Operating

6.1 Powering up

First of all, please make sure your MAX is connected correctly to your pre amplifier, speakers and mains (see section '*Installation and power supply*' on page 9 and section '*Inputs and outputs*' on page 11).

The MAX is a stand-by unit. Please operate the mains switch [9] on the back panel. The display shows for a brief moment a welcome message. After that the MAX is in stand-by mode.

Only in cases of extended absence (like vacations) or if massive trouble on the mains power is to be expected it is recommended to disconnect the MAX from mains. Operate the mains switch [9] on the back panel to switch off the unit from mains. The display will go dark.

Important

- **Never pull the mains cord while the MAX is switched on! Before you operate the mains switch [9] on the back panel or pull the mains plug, power down the unit to stand-by mode first.**

6.2 Switching on/off

To power up the MAX from stand-by mode, press the **power** key on the front panel. The MAX issues the message **`Waking up...`**. In case the mains plug has the incorrect polarization a warning will appear in the display (see section '*Mains phase detection*' on page 14). After that the unit notifies the user of the currently selected input. Now the MAX is in normal operating mode.

If you would like to switch off the unit, please press the **power** key on the front panel. The display shows the message **`Going to sleep..`** which then will be replaced after a short moment by:

```
DISCHARGING NOW
 please wait...
```

until the power supply of the MAX is discharged completely. The unit is now in stand-by mode.

Note

- During powering down, you may re-start the MAX by pressing the **power** key on the front panel. The display shows the message **`RE-STARTING...`**.

6.3 Mains phase detection

The correct polarization of mains is important for reasons of audio clarity and stability. Please connect the mains cord that the 'hot' pin of the wall outlet is connected to the pin marked '**PHASE**' [7] of the mains input [8] on the back panel. The MAX recognizes the incorrect polarization of the mains plug automatically. Right after switching on the unit from stand-by mode by pressing the **power** key on the front panel the following message appears in the display in case the mains polarization is incorrect:

```
Attention: Mains
Phase incorrect!
```

If you read the above message, power down the unit by pressing the **power** key. Please wait until the display no longer reads

```
DISCHARGING NOW
 please wait...
```

Disconnect the MAX from mains by operating the mains switch [9]. Now pull the mains plug and re-insert it into the mains socket rotated by 180°.

If you switch on the unit again, the warning should not appear now.

Important

- If the MAX issues the mains polarization warning or no warning at all for both positions of the mains plug, check the connection to earth of your mains socket and mains cord. **You have to ensure a stable connection to earth for the mains phase detection of the MAX to work correctly!**

6.4 Using Audionet Link

If your MAX is connected to an Audionet pre amplifier via 'Audionet Link', use the remote control of the pre amplifier to automatically switch on/off the MAX (and all other Audionet units also connected via 'Audionet Link').

For setting up the necessary connections please refer to section '*Audionet Link*' on page 12.

Note

- The 'switch on' signal is issued to any further Audionet units daisy chained to the 'Audionet Link' output of your MAX with a little delay to avoid all units switching on at the same moment, which could cause an overload of your mains fuse.
- Independently from the 'Audionet Link' interface, you can switch on/off your MAX at any time by using the **power** key on the front panel.

6.5 AutoStart function

If the AutoStart function is active, the MAX starts up automatically to normal operating mode right after the unit is connected to mains power (e.g. by operating the mains switch 9 on the back panel). Use this option to start up the MAX automatically using a timer device. For further details please refer to section '*Set AutoStart*' on page 22.

6.6 Auto On/Off function

Your Audionet MAX is equipped with a multi-stage input signal detection circuit (Auto On function). If an input signal is detected at the input (Cinch or balanced (XLR)) crossing the user selectable threshold the MAX will switch on automatically. For further details please refer to section '*Set Auto On*' on page 21.

Note

- Due to security concerns the Auto On function will only be available after first manual switching on.
- Because of the nature of stereo or multi-channel signals it may occur that the MAX in your setup will switch on at a different point of time according to each input signal.
- Operate the MAX as usual. Of course, you are still able to switch on/off the unit manually.

The MAX will shut down automatically (Auto Off function) when no input signal is detected for a user selectable time (30 seconds up to 2 hours). To activate and setup this feature please refer to section '*Set Auto On*' on page 21.

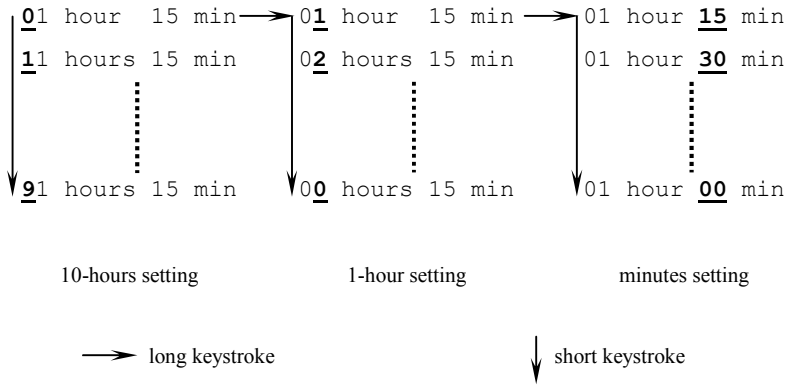
6.7 Warm Up Countdown

While you are absent the MAX can switch on automatically after a preselected time (15 minutes up to 99 hours and 45 minutes) and is then preheated and ready for a listening session when you get back. To setup the countdown clock press the **power** key on the front panel longer than 2 seconds (= long keystroke) while the MAX is in stand-by mode. The display shows:

```
WARM UP IN :
01 hour  15 min
```

The cursor marks the digit of the countdown time to edit. A long keystroke moves the cursor one digit to the right.

Use short keystrokes (= press key less than 2 seconds) on the **power** key to set the desired digit. Hours can be programmed in steps of 1 hour, minutes in steps of 15 min. The following diagram explains the possible countdown timer settings:



Activate the countdown timer by leaving the timer setup menu with a long keystroke. Alternatively, the countdown is started automatically if you do not change any setting for longer than 12 seconds.

Note

- While the countdown is running, the display shows the remaining time until automatic start-up:

```
WARM UP IN :
02 hours  43 min
```

- If the display saver is active, the display shows the remaining countdown time abbreviated (e.g. **02:43**). Please refer to section '*Set Dim Level*' on page 20 for detailed information on the display saver.

If you would like to use the countdown timer again, simply activate it by a long keystroke: While in stand-by mode press the **power** key longer than 2 seconds and wait. After 12 seconds the countdown will start again with the previous programmed time.

To de-activate a running countdown just press the **power** key for less than 2 seconds at any time.

7 Protection system

Your Audionet MAX and your loudspeakers are protected by a complex protection circuitry. In case of a malfunction the display informs the user about the nature of the detected error in plain text:

Error message	Possible cause
Overload	short circuit or defective speaker
Overheating	ventilation slots covered
High Frequency	defective pre amplifier
DC Voltage	exceeding DC level at the output: defective pre amplifier or source unit
PreVolt Positive	malfunction in power supply: service required
PreVolt Negative	malfunction in power supply: service required
Power Failure	(temporary) breakdown of mains
Discharging Malfunction	internal malfunction during discharging: service required

Even after powering down the MAX, the error message will still be in the display. Press the **power** key on the front panel to reset the display to indicating the stand-by mode.

Important

- Remove cause of error prior to switching on the MAX again!

8 Setup menu

Beyond the feature of the 'Warm Up-Countdown' you can adjust the MAX to your preferences using the setup menu.

List of settings to be adjusted according to your preferences:

- Brightness of display (**`Set Dim Level`**)
- Input selection: balanced (XLR) or Cinch (**`Set Input`**)
- Auto On function: threshold for automatic power on (**`Set Auto On`**)
- Auto Off function: time to automatic power down (**`Set Auto Off`**)
- AutoStart function: automatic start for timer control (**`Set AutoStart`**)

Press the **power** key on the front panel longer than 2 seconds (= long keystroke) to enter the setup menu. Use a short keystroke (= less than 2 seconds) to navigate to the next menu item.

Select a menu item with a long keystroke. Now you can select your desired option with short keystrokes.

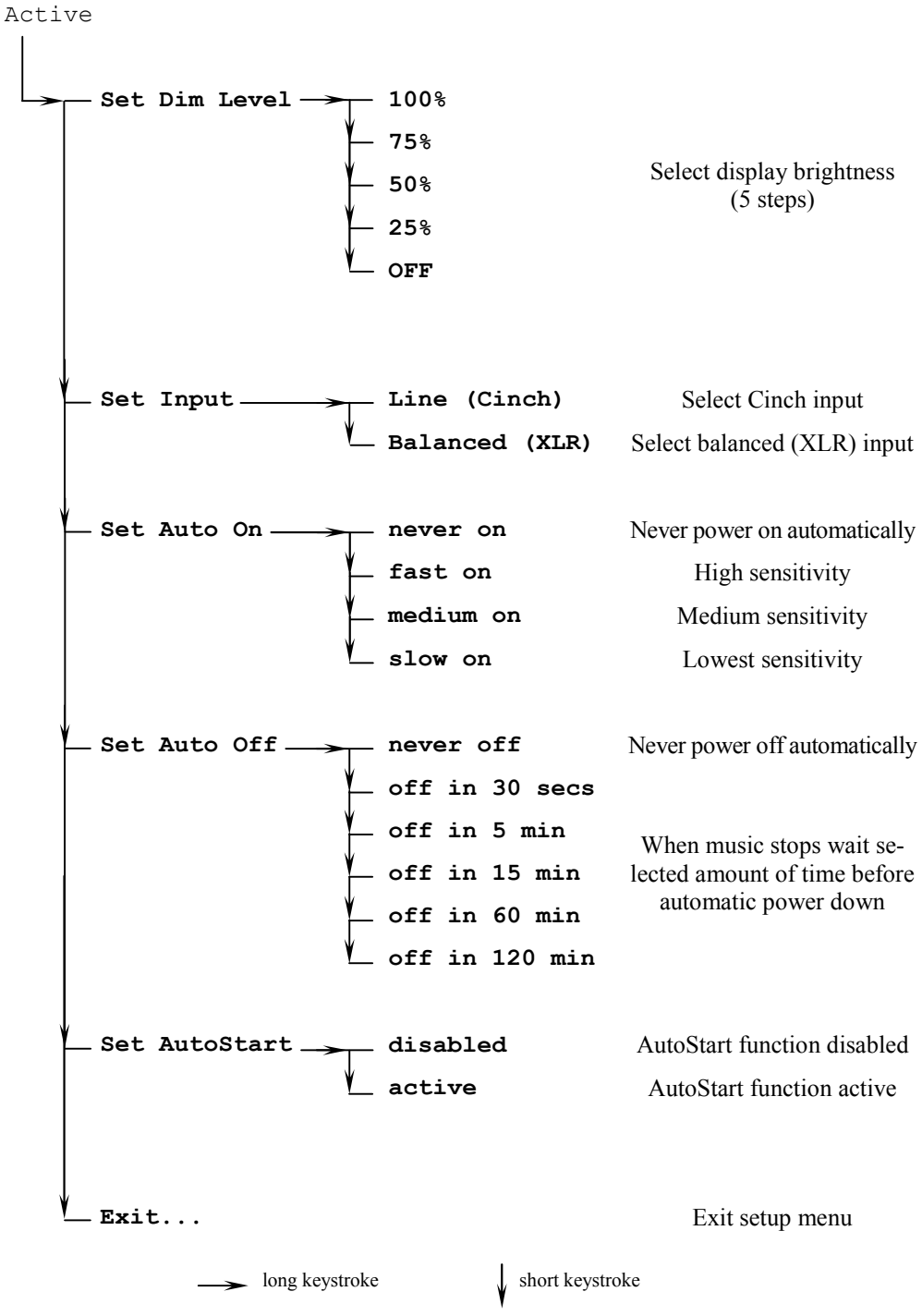
To leave a menu item hold down the **power** key longer than 2 seconds or simply wait longer than 12 seconds. If you would like to change more settings please re-enter the setup menu.

While you are in the main menu, get back to normal operating mode by waiting longer than 12 seconds or navigate to menu item **`Exit...`** and select it.

Note

- In case you stop editing any user setting the MAX will leave the setup menu automatically after 12 seconds and returns to normal operating mode.
- While you are in the setup menu the display brightness is adjusted to 100% for better readability. Leaving the setup menu resets the display brightness to the user selected level automatically.
- If you power down the unit to stand-by mode, all user settings are stored automatically in the non-volatile memory of the unit. Even after disconnecting from mains the MAX will still remember your settings.

The following diagram gives an overview of the structure of the setup menu. The subsequent sections explain all options of the setup menu in detail.


Active
Set Dim Level
100%
75%
50%
25%
OFF
Select display brightness (5 steps)
Set Input
Line (Cinch)
Select Cinch input
Balanced (XLR)
Select balanced (XLR) input
Set Auto On
never on
Never power on automatically
fast on
High sensitivity
medium on
Medium sensitivity
slow on
Lowest sensitivity
Set Auto Off
never off
Never power off automatically
off in 30 secs
off in 5 min
off in 15 min
off in 60 min
off in 120 min
When music stops wait selected amount of time before automatic power down
Set AutoStart
disabled
AutoStart function disabled
active
AutoStart function active
Exit...
Exit setup menu
long keystroke
short keystroke

8.1 Set Dim Level

Select the brightness of the display on the front panel. Five settings are available: 100%, 75%, 50%, 25% and OFF.

Important

- **Long-term usage of the display set to maximum brightness (setting 100%) may cause extended signs of wear resulting in a decay of contrast or brightness of individual dots in the display. Do not use the display with a brightness set higher than the factory default of 50% over a longer period of time!**

Note

- Is the brightness set to **`Off`** the display is only on during setup adjustments, powering up/down and while displaying an error message. It switches off automatically several seconds after the last user entry.
- The MAX activates the 'Display saver' automatically after 10 minutes without a user entry.
- While the 'display saver' is active, in normal operating mode the display shows the selected input channel or the temperature (depending on the selected display mode (**`Set Display`**) in the abbreviated form **`Line/XLR In`**. The display brightness is automatically reduced to 25%, and the location of the information text will change randomly every 12 seconds to prevent any 'burn-in' effect of the display.
- The 'display saver' is de-activated, and the display returns to its normal mode as soon as any user entry is detected.
- The user cannot switch off the automatic 'display saver' function!

8.2 Set Input

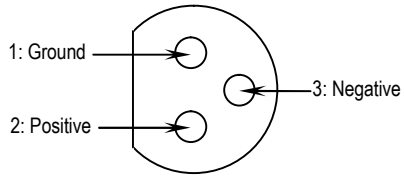
Select the input you connected your pre amplifier to.

`Line (Cinch)` Select this option if you connected your pre amplifier to the Cinch input 3 of the MAX.

`Balanced (XLR)` Select this option if you connected your pre amplifier to the balanced (XLR) input 2 of the MAX.

Tip

Pinning of the balanced (XLR) input:



The pins are marked with the same number as in the diagram above.

8.3 Set Auto On

Your Audionet MAX is equipped with an input signal detector (Auto On function). If the signal at the selected input (Cinch or balanced (XLR)) crossed the user selectable threshold the MAX will power up automatically. Select the threshold level you need:

`never on` Select this option if you would like to de-activate the Auto On function. The MAX will not power up automatically.

`fast on` If you select this option, the threshold is low. Even small signals will power up the MAX automatically.

`medium on` Moderate sensitivity for regular signal levels.

`slow on` High threshold. The MAX starts up automatically only when detecting input signals of higher level.

Note

- Due to security concerns the Auto On function will only be available after first manual switching on.
- Because of the nature of stereo or multi-channel signals it may occur that the MAX in your setup will switch on at a different point of time according to each input signal.
- Operate the MAX as usual. Of course, you still be able to switch on/off the unit manually

8.4 Set Auto Off

The MAX will power down automatically (Auto Off function) when no input signal is detected for a user selectable amount of time.

Select the desired time to shut down:

never off Select this option if you would like to de-activate the Auto Off function. The MAX will not shut down automatically if no signal is detected. You have to power down the unit to stand-by mode manually.

off in 30 secs If no input signal is detected for 30 seconds the MAX will shut down automatically.

off in 5 min After 5 minutes without an input signal the MAX will shut down.

off in 15 min After 15 minutes without an input signal the MAX will shut down.

off in 60 min After 1 hour without an input signal the MAX will shut down.

off in 120 min After 2 hours without an input signal the MAX will shut down.

8.5 Set AutoStart

If the AutoStart function is active, the MAX starts up automatically to normal operating mode right after the unit is connected to mains power (e.g. by operating the mains switch [9] on the back panel). Use this option to start up the MAX automatically using a timer device.

disabled The AutoStart function is de-activated. If you connect the MAX to mains power, the unit will start up to stand-by mode. To activate the MAX use the **power** key on the front panel, the Audionet Link interface or the Auto On function.

active The AutoStart function is active. As soon as the MAX is connected to mains power, the unit will start up to normal operating mode automatically. Use this setting to control the MAX using a timer device.

Tip

- In order to use the AutoStart function with a timer device, the mains switch [9] on the back panel has to be in position 'on' all the time. The connection to mains is switched by the timer device in this case.

8.6 Overview factory defaults

Option	Setting
SET DIM LEVEL	50%
SET INPUT	Line (Cinch)
SET AUTO ON	never on
SET AUTO OFF	never off
SET AUTOSTART	disabled

Note

- The Warm Up countdown is preset by default to 1 hour and 15 min, but de-activated (see section '*Warm Up Countdown*' on page 15).

9 Technical information

9.1 Design

To optimize the high frequency properties the circuitry was consequently miniaturized and SMD technology implemented. Signal path ways are limited to a minimum length and contain no components harmful to the quality of sound like coupling capacitors, coils or relays. The construction is optimized magnetically and capacitively. Influences of interference and interaction between amplifier stages are extensively ruled out. The signal cables are made of pure silver and gold metallurgy.

9.2 Circuitry

The input stage is designed as a double differential amplifier with a low-noise monolithic double-FET. It is powered separately by a 80 VA toroid core transformer. The gain-bandwidth-product of the input stage is greater than 1 GHz. Double-boot-strapping decouples the input from the power stage. The power stage consists of eight Power-MOSFETs. The bias current is controlled actively. A complex correction circuit locally compensates distortion in real-time.

9.3 Power supply

The control, input and power stage circuits have separate power supplies with separate transformers and rectifiers. Two encapsulated main transformers with 1,000 VA each drive Schottky rectifier diodes supplying four fast and impulse stable high current capacitors with a total capacity of 156,000 µF. The power supply voltages are smoothed by discrete and optimized MOSFET regulators.

9.4 Handling

The microprocessor controls all functions and constantly monitors DC level, high frequency, temperature and overload and switches off the MAX from mains in case an error is detected. The display issues error messages in plain text. Automatic power on/off is provided by the Audionet Link interface, the AutoStart and Auto On/Off function, the latter depending on a user selectable threshold of the input signal. User configurable inputs are switched by gold plated high precision relays.

10 Security advice

Important

- Avoid packaging material, especially plastic bags, coming into children's hands!
- Store and operate the unit in a dry room at a reasonable room temperature only!
- Avoid moisture, any liquids, dirt or small objects getting into the unit!
- Set up the unit in a sufficiently ventilated environment!
- Do not cover the unit!
- Do not open the unit. Unauthorised opening will void warranty!
- Do not short-circuit the outputs!
- During connecting or removing loudspeakers and/or the pre amplifier your MAX must be switched off to prevent damage to the amplifier or the connected units.
- Use dry cloth for cleaning!

We would like to wish you many exciting listening experiences with your new Audionet product.

If you still have any questions, do not hesitate to ask your competent Audionet dealer or contact us directly.

11 Technical data

Function	Microprocessor controlled mono power amplifier
Power	400 Watts in 8 Ohms 700 Watts in 4 Ohms 1,100 Watts in 2 Ohms
Frequency response	0 – 500,000 Hz (-3dB)
Damping factor	> 1,800 @ 10 kHz > 10,000 @ 100 Hz
Intermodulation	< -110 dB SMPTE 100 Hz : 20 kHz, 4:1, 50 W/4 Ohms
THD+N	< -106 dB @1 kHz (25 Watts / 4 Ohms) < -106 dB @ 1 kHz (700 Watts / 4 Ohms) (Bandwidth: 20 Hz to 20 kHz)
Noise spectrum	k2 typ. –117 dB for 25 Watts in 4 Ohms k3 typ. –123 dB for 25 Watts in 4 Ohms
SNR	> 125 dB
Input impedance	coaxial: 37 kOhm, 100 pF balanced: 3 kOhm, 100pF
Inputs	1 **Furutech** Cinch line, gold plated 1 **Neutrik** XLR balanced, gold plated 1 Audionet Link, optical
Outputs	2 pairs of **Furutech** speaker terminals, Rhodium, for comfortable Bi-Wiring 1 Audionet-Link, optical
Mains	230 V, 50..60 Hz
Power consumption	Stand-by < 1 W, Auto On aktiv < 4W Warm Up Timer aktiv < 5 W 100 W typ., max. 2000 W
Dimensions	Width: 215 mm Height: 285 mm Depth: 500 mm
Weight	38 kg

Finish	**Front**: brushed aluminium, 10 mm black anodized, light grey print or aluminium 'nature' anodized, black print **Display**: red or blue **Top**: aluminium, black anodized, 6 mm **Sides**: aluminium, black anodized, 4 mm **Chassis**: steel, black coated, 2 mm
Features	- Audionet ULA technology - magnetically and capacitively optimized design - shortest signal paths, no capacitors in the signal path, completely DC-coupled - separate power supplies for input and power stages - two encapsulated torroid transformers with 1,000 VA each - four special smoothing capacitors with an overall capacity of 156.000 µF - big two-line vacuum fluorescent display - remote power up/down via 'Audionet Link' or input signal (3 sensitivity settings) - timer function - microprocessor monitored protection circuit - protection circuitry detecting HF, DC, overheating and overload - automatic mains phase recognition - display saver

Errors and omissions excepted. Specifications and design are subject to changes without prior notice.

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